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Description

Background of the invention

This invention relates to the production of dihydric phenols by the oxidation of dialkylbenzenes to dialkylbenzene dihydroperoxides and the acid-catalyzed rearrangement of the dihydroperoxides to the dihydric phenol.

It is known to oxidize meta and para-diisopropylbenzene to meta and para-diisopropylbenzene dihydroperoxide, and to rearrange the dihydroperoxide by acid cleavage (Hock splitting) to resorcinol or hydroquinone. See for example Tanaka, et al U.S. Patent No. 4,049,723, incorporated herein by reference for all purposes, the references disclosed therein, U.S. Patents 4,053,520 and 3,968,171 and the paper by J. Ewers, H. W. Voges and G. Maleck entitled "Process for the Production of Hydroquinone", Erdöl Kohle Erdgas, Petrochem. Br. Chem., Vol. 28, No. 1, 1975, pp. 34+.

British Patent 785,607 discloses a process for the production of diisopropylbenzene dihydroperoxides by reacting meta- and/or para-diisopropylbenzene in the liquid phase at elevated temperatures with molecular oxygen to produce a concentration of mono-hydroperoxide of at least about 45% by weight, contacting the oxidate with a nonacidic aqueous solution to extract the dihydroperoxide, and subjecting the residue of the oxidate to further oxidation, characterized by the use as feed of diisopropylbenzene which is substantially free from tri-methylindane and ortho-diisopropylbenzene and which has been produced by the alkylation of benzene or isopropylbenzene or by the disproportionation of ortho-diisopropylbenzene or polyisopropylbenzenes, in the presence of aluminum chloride as a catalyst under prescribed reaction conditions.

In the first step of the process, the dialkylbenzene is oxidized with oxygen to dialkylbenzene monohydroperoxide, e.g. para-diisopropylbenzene monohydroperoxide, which is further oxidized to the dihydroperoxide. In this step the hydroperoxide groups are decomposed in various degrees which gives rise to several by-products including alcoholic and ketonic decomposition products and their further oxidation products. The main by-product is the hydroxyhydroperoxide which results from the oxidation of monocarbinol which itself results from the decomposition of the monohydroperoxide. Thus the process is optimized by choosing the reaction conditions to minimize the production of the hydroxyhydroperoxide. Elevation of the reaction temperature increases the production of the dihydroperoxide and the hydroxyhydroperoxide. However, the production of the hydroxyhydroperoxide increases at a greater rate with an increase in temperature. Thus the reaction is generally conducted at a temperature in the range from about 83°C to about 87°C in order to insure good dihydroperoxide yield and to minimize the reactor space required.

Using air as the oxidizing gas, generally the oxygen content of the exhaust gas from the reactor is kept below about 8% for safety reasons. This allows sufficient oxygen to be present in the reaction liquid such that the rate of oxidation is independent of the oxygen content in the liquid and thus is maximal. Formic acid is formed as a by-product of the reaction. Thus the oxidation is carried out in a weakly alkaline range. Low concentration sodium hydroxide, 0.3%, is added to the oxidizer with the oxidate to maintain the pH in the oxidizer from about 7.0 to about 7.5. The pH must be carefully controlled otherwise decomposition reactions are catalyzed increasing the concentration of by-products.

In the second step of the process, the aqueous caustic waste stream is separated from the organic oxidate stream after oxidation.

In the third step of the process, the organic oxidate is extracted with 4% by weight aqueous sodium hydroxide solution. In this step the dihydroperoxide and the hydroxyhydroperoxide enter the aqueous phase, together with other by-products, and unreacted dialkylbenzene, e.g. p-diisopropylbenzene, and monohydroperoxide is recovered for recycling to the oxidizer. Before recycling, however, entrained sodium hydroxide must be removed to insure adequate pH control in the oxidizer. Generally, this is accomplished by subjecting the recycle oxidate to the action of carbon dioxide and several subsequent water washes.

The fourth step of the process comprises transfer of the organic components in the 4% aqueous caustic solution into an organic solvent such as methyl isobutyl ketone and recycling the caustic solution.

The fifth step in the process comprises the acid-catalyzed splitting of the diisopropylbenzene dihydroperoxide, in the organic solvent, to the dihydric phenol and acetone.

The sixth step in the process comprises the separation and recovery of the dihydric phenol from the by-products and organic solvent.

The aqueous caustic waste stream separated from the oxidate in step two contains organic impurities and the desired intermediate, meta or para-diisopropylbenzene dihydroperoxide. These impurities result in a loss of product, and further processing is required to render the waste stream environmentally safe for disposal.

Summary of the invention

We have now found that the aqueous caustic waste stream can be utilized to wash the recycle oxidate in the third step of the process described above. In this manner, the caustic concentration is reduced to an acceptable level in the recycle oxidate, and dialkylbenzene dihydroperoxide in the aqueous caustic waste stream is recovered for recycling to the oxidizer.

Accordingly, it is an object of this invention to increase the yield of the dialkylbenzene dihydroperoxide in the re-cycle oxidate.

It is another object of this invention to utilize the aqueous caustic waste stream from the oxidizer to wash entrained caustic from the recycle oxidate.

5 These and other objects of this invention will become apparent to one skilled in the art upon reading this specification and the appended claims.

The present invention specifically discloses an improvement in a process for the manufacture of a dihydric phenol from a dialkylbenzene wherein said dialkylbenzene is oxidized to the corresponding dialkylbenzene dihydroperoxide in an oxidizer with air in the presence of sufficient dilute aqueous sodium
10 hydroxide to maintain the pH in the oxidizer in the range from 7.0 to 7.5, wherein the organic phase and the aqueous phase from the oxidizer are separated and the organic phase is extracted with an aqueous sodium hydroxide solution to extract the dihydroperoxide for further processing, and wherein from the organic phase from the caustic extractor before it is recycled to the oxidizer, entrained sodium hydroxide is removed, characterized in that the entrained sodium hydroxide in the organic phase from the caustic
15 extractor is removed by washing the said phase with the aqueous phase from the oxidizer, feeding the organic phase from the wash unit to the oxidizer, and feeding the aqueous phase from the wash unit to a purge unit for disposal.

The subject invention also reveals an improvement in a process for the manufacture of a dihydric phenol from a dialkylbenzene wherein said dialkylbenzene is oxidized to the corresponding dialkylbenzene dihydroperoxide and various by-products in an oxidizer with air in the presence of sufficient dilute aqueous sodium hydroxide to maintain the pH in the range from 7.0 to 7.5, wherein the organic phase and the
20 aqueous phase from the oxidizer are separated and the organic phase from the oxidizer is extracted with an aqueous caustic solution to extract the dihydroperoxide for further processing, and wherein from the organic phase from the caustic extractor before it is recycled to the oxidizer, entrained caustic is removed, characterized in that the entrained caustic concentration in the organic phase from the caustic extractor is
25 decreased by washing said phase with the aqueous phase from the oxidizer, separating the organic phase from the aqueous phase, and feeding the organic phase to the oxidizer.

The present invention further discloses an improvement in a process for the manufacture of a dihydric phenol from a dialkylbenzene wherein said dialkylbenzene is oxidized to the corresponding dialkylbenzene dihydroperoxide in an oxidizer with oxygen in the presence of sufficient dilute aqueous sodium hydroxide
30 to maintain the pH in the oxidizer in the range from 7.0 to 7.5, wherein the organic phase and the aqueous phase from the oxidizer are separated and the organic phase is extracted with an aqueous sodium hydroxide solution to extract the dihydroperoxide for further processing, and wherein from the organic phase from the caustic extractor before it is recycled to the oxidizer, entrained sodium hydroxide is
35 removed, characterized in that the entrained sodium hydroxide in the organic phase from the caustic extractor is removed by washing the said phase with the aqueous phase from the oxidizer, feeding the organic phase from the wash unit to the oxidizer, and feeding the aqueous phase from the wash unit to a purge unit for disposal.

40 Brief description of the drawing

The single figure is a schematic flowsheet illustrating the process of this invention.

Description of the preferred embodiments

While the invention will be described with particular reference to the production and recovery of
45 hydroquinone from the oxidation of a p-dialkylbenzene dihydroperoxide, it is to be understood that it is equally applicable to the production of other dihydric phenols, such as resorcinol, from the oxidation of meta-dialkylbenzenes such as m-diisopropylbenzene.

As indicated, methods are known for converting p-diisopropylbenzene to hydroquinone via oxidation to p-diisopropylbenzene dihydroperoxide, and acid-splitting this intermediate to hydroquinone. The
50 process of the present invention can be utilized in any of these known processes which utilize the step of washing the recycle oxidate to decrease the concentration of caustic therein. See for example the paper by J. Ewers, et al referenced hereinbefore.

The process of this invention is practiced by flowing the aqueous waste stream from the oxidizer to the vessel containing the recycle oxidate, washing the recycle oxidate with the aqueous waste stream to
55 decrease the entrained caustic concentration in the recycle oxidate and increase the concentration of p-diisopropylbenzene dihydroperoxide in the recycle oxidate, and thereafter separating the waste aqueous stream from the recycle oxidate.

The process will be illustrated by the following examples.

60 Example 1

p-diisopropylbenzene was oxidized to p-diisopropylbenzene dihydroperoxide and various by-products with oxygen at a temperature of 105° to 110°C. The pH was maintained at 7 to 7.5 by the addition of a 0.3% by weight aqueous sodium hydroxide solution.

Referring now to the drawing, recycle oxidate and p-diisopropylbenzene from wash unit 11 via line 5,
65 the aqueous caustic via line 4, and oxygen via line 2 were admitted into the bottom of the reactor (oxidizer)

1, the oxidate and exhaust gas exiting reactor via line 20 where it is sent to separator 6. Nitrogen via line 3 was added to the head space (top) of the reactor (oxidizer) to maintain the oxygen content of the exhaust gas from the reactor below about 8%. In separator 6, the oxidate is separated into an aqueous stream 7 and an organic stream 8, the organic stream 8 being fed to a caustic extractor 9 wherein the p-diisopropylbenzene dihydroperoxide, the p-hydroxyhydroperoxide, and certain impurities were extracted into the 4% aqueous caustic solution introduced into extractor 9 via line 17. Recycle oxidate from extractor 9 was fed to a water wash unit 11 via line 10. Simultaneously, the aqueous waste stream 7 from oxidizer 1 was admitted to wash unit 11. An aqueous stream from caustic extractor 9 and containing dihydroperoxide, monohydroperoxide and hydroxyhydroperoxide was fed via line 12 to extractor 13 where it was contacted with fresh p-diisopropylbenzene, introduced via 16, which extracted the valuable precursor p-diisopropylbenzene monohydroperoxide from the aqueous phase. The organic phase from extractor 13 was then fed to the wash unit 11 via line 10, the aqueous phase being fed via line 15 to a methyl isobutyl ketone extractor for further processing to hydroquinone.

In the wash unit 11, the caustic solution entrained in the recycle oxidate 22, from the caustic extractor 9 and in the organic phase 14 from the p-diisopropylbenzene (p-DIPB) extractor 13 is removed by the aqueous waste stream 7 from the oxidizer 1. Simultaneously, p-diisopropylbenzene dihydroperoxide present in the aqueous waste stream enters the organic phase which is recycled to the oxidizer via line 5, the aqueous phase from the wash unit 11 being purged from the system via line 16.

Using the process described above, sufficient caustic was removed from the recycle oxidate introduced into water wash unit 11 to permit good pH control of oxidizer 1. Additionally, at least 50% of the para-diisopropylbenzene dihydroperoxide was recovered from the waste water along with some of the waste solids present in the waste water.

Example 2

The same procedure that was employed in Example 1 was utilized here except that m-diisopropylbenzene was used in lieu of p-diisopropylbenzene. In this procedure the temperature utilized was 110°C and the caustic was 0.4% by weight aqueous sodium hydroxide solution. The result obtained was identical to Example 1 except that m-diisopropylbenzene dihydroperoxide was recovered.

The foregoing description of the invention is illustrative and explanatory thereof, and various changes in the method steps may be made within the wording of the appended claims.

Claims

1. An improvement in a process for the manufacture of a dihydric phenol from a dialkylbenzene wherein said dialkylbenzene is oxidized to the corresponding dialkylbenzene dihydroperoxide in an oxidizer with air in the presence of sufficient dilute aqueous sodium hydroxide to maintain the pH in the oxidizer in the range from 7.0 to 7.5, wherein the organic phase and the aqueous phase from the oxidizer are separated and the organic phase is extracted with an aqueous sodium hydroxide solution to extract the dihydroperoxide for further processing, and wherein from the organic phase from the caustic extractor before it is recycled to the oxidizer, entrained sodium hydroxide is removed, characterized in that the entrained sodium hydroxide in the organic phase from the caustic extractor is removed by washing the said phase with the aqueous phase from the oxidizer, feeding the organic phase from the wash unit to the oxidizer, and feeding the aqueous phase from the wash unit to a purge unit for disposal.

2. The process of Claim 1 characterized in that said dialkylbenzene is a p-dialkylbenzene and in that said dihydric phenol is hydroquinone.

3. The process of Claim 1 characterized in that said dialkylbenzene is a m-dialkylbenzene and in that said dihydric phenol is resorcinol.

4. An improvement in a process for the manufacture of a dihydric phenol from a dialkylbenzene wherein said dialkylbenzene is oxidized to the corresponding dialkylbenzene dihydroperoxide and various by-products in an oxidizer with air in the presence of sufficient dilute aqueous sodium hydroxide to maintain the pH in the range from 7.0 to 7.5, wherein the organic phase and the aqueous phase from the oxidizer are separated and the organic phase from the oxidizer is extracted with an aqueous caustic solution to extract the dihydroperoxide for further processing, and wherein from the organic phase from the caustic extractor before it is recycled to the oxidizer, entrained caustic is removed, characterized in that the entrained caustic concentration in the organic phase from the caustic extractor is decreased by washing said phase with the aqueous phase from the oxidizer, separating the organic phase from the aqueous phase, and feeding the organic phase to the oxidizer.

5. The process of Claim 4 characterized in that said dialkylbenzene is a p-dialkylbenzene and in that said dihydric phenol is hydroquinone.

6. The process of Claim 4 characterized in that said dialkylbenzene is a m-dialkylbenzene and in that said dihydric phenol is resorcinol.

7. An improvement in a process for the manufacture of a dihydric phenol from a dialkylbenzene wherein said dialkylbenzene is oxidized to the corresponding dialkylbenzene dihydroperoxide in an oxidizer with oxygen in the presence of sufficient dilute aqueous sodium hydroxide to maintain the pH in the oxidizer in the range from 7.0 to 7.5, wherein the organic phase and the aqueous phase from the

oxidizer are separated and the organic phase is extracted with an aqueous sodium hydroxide solution to extract the dihydroperoxide for further processing, and wherein from the organic phase from the caustic extractor before it is recycled to the oxidizer, entrained sodium hydroxide is removed, characterized in that the entrained sodium hydroxide in the organic phase from the caustic extractor is removed by washing the said phase with the aqueous phase from the oxidizer, feeding the organic phase from the wash unit to the oxidizer, and feeding the aqueous phase from the wash unit to a purge unit for disposal.

8. The process of Claim 7 characterized in that said dialkylbenzene is a p-dialkylbenzene and in that said dihydric phenol is hydroquinone.

9. The process of Claim 7 characterized in that said dialkylbenzene is a m-dialkylbenzene and in that said dihydric phenol is resorcinol.

Patentansprüche

1. Verbesserung bei einem Verfahren zur Herstellung eines zweiwertigen Phenols aus einem Dialkylbenzol, wobei das Dialkylbenzol zu dem entsprechenden Dialkylbenzoldihydroperoxid in einer Oxidationsvorrichtung mit Luft in Gegenwart einer solchen Menge an verdünntem wässrigen Natriumhydroxid oxidiert wird, daß der pH in der Oxidationsvorrichtung im Bereich von 7,0 bis 7,5 gehalten wird, wobei die organische Phase und die wässrige Phase aus der Oxidationsvorrichtung getrennt werden und die organische Phase mit einer wässrigen Natriumhydroxidlösung extrahiert wird, um das Dihydroperoxid für die weitere Verarbeitung zu extrahieren, und wobei aus der organischen Phase aus der alkalisch arbeitenden Extraktionsvorrichtung mitgeschlepptes Natriumhydroxid entfernt wird, bevor sie erneut der Oxidationsvorrichtung zugeführt wird, dadurch gekennzeichnet, daß das in der organischen Phase aus der alkalisch arbeitenden Extraktionsvorrichtung mitgeschleppte Natriumhydroxid durch Waschen der Phase mit der wässrigen Phase aus der Oxidationsvorrichtung entfernt wird, die organische Phase aus der Wascheinheit zu der Oxidationsvorrichtung zugeführt wird und die wässrige Phase aus der Wascheinheit einer Reinigungseinheit für die Beseitigung zugeleitet wird.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das Dialkylbenzol ein p-Dialkylbenzol und das zweiwertige Phenol Hydrochinon ist.

3. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das Dialkylbenzol ein m-Dialkylbenzol und das zweiwertige Phenol Resorcin ist.

4. Verbesserung bei einem Verfahren zur Herstellung eines zweiwertigen Phenols aus einem Dialkylbenzol, wobei das Dialkylbenzol zu dem entsprechenden Dialkylbenzoldihydroperoxid und verschiedenen Nebenprodukten in einer Oxidationsvorrichtung mit Luft in Gegenwart einer solchen Menge eines verdünnten wässrigen Natriumhydroxids oxidiert wird, daß der pH in dem Bereich von 7,0 bis 7,5 gehalten wird, wobei die organische Phase und die wässrige Phase aus der Oxidationsvorrichtung getrennt werden und die organische Phase aus der Oxidationsvorrichtung mit einer wässrigen alkalischen Lösung zum Extrahieren des Dihydroperoxids für die weitere Verarbeitung extrahiert wird, und wobei aus der organischen Phase aus der alkalisch arbeitenden Extraktionsvorrichtung mitgeschlepptes Alkali vor der erneuten Einführung in die Oxidationsvorrichtung entfernt wird, dadurch gekennzeichnet, daß die mitgeschleppte Alkalikonzentration in der organischen Phase aus der alkalisch arbeitenden Extraktionsvorrichtung in der Weise herabgesetzt wird, daß diese Phase mit der wässrigen Phase aus der Oxidationsvorrichtung gewaschen wird, die organische Phase von der wässrigen Phase abgetrennt wird und die organische Phase der Oxidationsvorrichtung zugeführt wird.

5. Verfahren nach Anspruch 4, dadurch gekennzeichnet, daß das Dialkylbenzol ein p-Dialkylbenzol und das zweiwertige Phenol Hydrochinon ist.

6. Verfahren nach Anspruch 4, dadurch gekennzeichnet, daß das Dialkylbenzol ein m-Dialkylbenzol und das zweiwertige Phenol Resorcin ist.

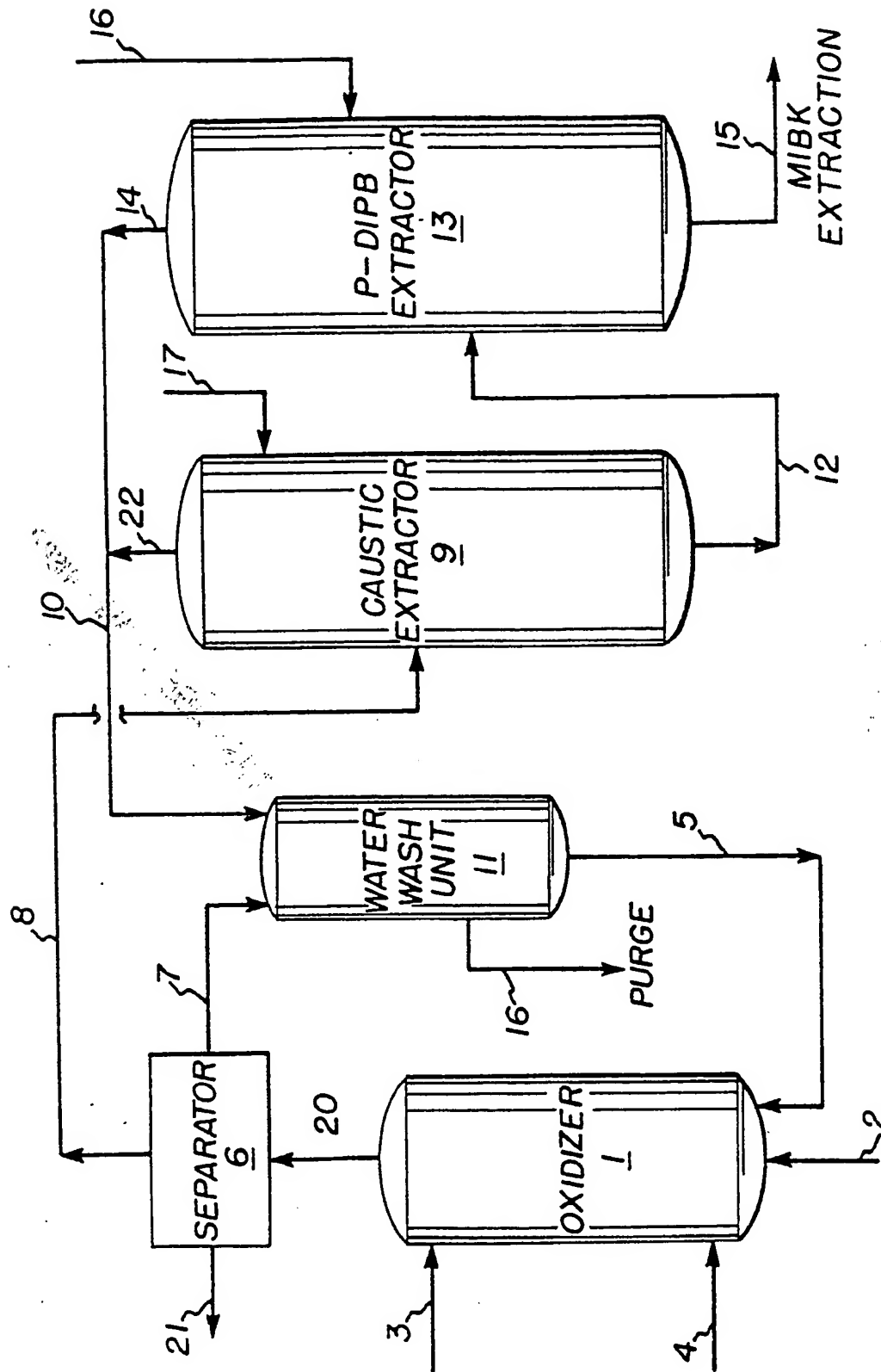
7. Verbesserung bei einem Verfahren zur Herstellung eines zweiwertigen Phenols aus einem Dialkylbenzol, wobei das Dialkylbenzol zu dem entsprechenden Dialkylbenzoldihydroperoxid in einer Oxidationsvorrichtung mit Sauerstoff in Gegenwart einer solchen Menge eines verdünnten wässrigen Natriumhydroxids oxidiert wird, die dazu ausreicht, den pH in der Oxidationsvorrichtung im Bereich von 7,0 bis 7,5 zu halten, wobei die organische Phase und die wässrige Phase aus der Oxidationsvorrichtung getrennt werden und die organische Phase mit einer wässrigen Natriumhydroxidlösung extrahiert wird, um das Dihydroperoxid für die weitere Verarbeitung zu extrahieren und wobei aus der organischen Phase aus der alkalisch arbeitenden Extraktionsvorrichtung vor der erneuten Zuführung in die Oxidationsvorrichtung mitgeschlepptes Natriumhydroxid entfernt wird, dadurch gekennzeichnet, daß das in der organischen Phase aus der alkalisch arbeitenden Extraktionsvorrichtung mitgeschleppte Natriumhydroxid durch Waschen der Phase mit der organischen Phase aus der Oxidationsvorrichtung entfernt wird, die organische Phase aus der Wascheinheit der Oxidationsvorrichtung zugeführt wird und die wässrige Phase aus der Wascheinheit einer Reinigungseinheit für die Beseitigung zugeleitet wird.

8. Verfahren nach Anspruch 7, dadurch gekennzeichnet, daß das Dialkylbenzol ein p-Dialkylbenzol und das zweiwertige Phenol Hydrochinon ist.

9. Verfahren nach Anspruch 7, dadurch gekennzeichnet, daß das Dialkylbenzol ein m-Dialkylbenzol und das zweiwertige Phenol Resorcin ist.

Revendications

1. Perfectionnement relatif à un procédé pour la fabrication de dihydroxybenzène à partir d'un dialkylbenzène, ce procédé comprenant les étapes qui consistent à oxyder, à l'air et dans un réacteur d'oxydation, le dialkylbenzène en dihydroperoxyde de dialkylbenzène correspondant, en présence d'hydroxyde de sodium aqueux dilué en une quantité suffisante pour maintenir le pH dans l'intervalle de 7,0 à 7,5 à l'intérieur du réacteur d'oxydation, séparer la phase organique et la phase aqueuse du réacteur d'oxydation et extraire la phase organique avec une solution aqueuse d'hydroxyde de sodium afin d'extraire le dihydroperoxyde en vue d'un traitement ultérieur, puis éliminer l'hydroxyde de sodium entraîné hors de la phase organique provenant de l'extracteur caustique avant son recyclage au réacteur d'oxydation, caractérisé en ce que l'hydroxyde de sodium entraîné dans la phase organique provenant de l'extracteur caustique est éliminé par lavage de cette phase avec la phase aqueuse provenant du réacteur d'oxydation, la phase organique provenant de l'unité de lavage étant acheminée au réacteur d'oxydation, tandis que la phase aqueuse provenant de l'unité de lavage étant acheminée à une unité de purge en vue de son élimination.
2. Procédé selon la revendication 1, caractérisé en ce que le dialkylbenzène est un p-dialkylbenzène, tandis que le dihydroxybenzène est l'hydroquinone.
3. Procédé selon la revendication 1, caractérisé en ce que le dialkylbenzène est un m-dialkylbenzène, tandis que le dihydroxybenzène est le résorcinol.
4. Perfectionnement relatif à un procédé pour la fabrication d'un dihydroxybenzène à partir d'un dialkylbenzène, ce procédé comprenant les étapes qui consistent à oxyder, à l'air et dans un réacteur d'oxydation, le dialkylbenzène en dihydroperoxyde de dialkylbenzène correspondant et en différents sous-produits, en présence d'hydroxyde de sodium aqueux dilué en une quantité suffisante pour maintenir le pH dans l'intervalle de 7,0 à 7,5, séparer la phase organique et la phase aqueuse du réacteur d'oxydation et extraire la phase organique du réacteur d'oxydation avec une solution aqueuse caustique afin d'extraire le dihydroperoxyde en vue d'un traitement ultérieur, puis éliminer la solution caustique entraînée hors de la phase organique provenant de l'extracteur caustique avant son recyclage au réacteur d'oxydation, caractérisé en ce que la concentration de la solution caustique entraînée dans la phase organique provenant de l'extracteur caustique est réduite par lavage de cette phase avec la phase aqueuse provenant du réacteur d'oxydation, la phase organique étant séparée de la phase aqueuse, après quoi elle est acheminée au réacteur d'oxydation.
5. Procédé selon la revendication 4, caractérisé en ce que le dialkylbenzène est un p-dialkylbenzène, tandis que le dihydroxybenzène est l'hydroquinone.
6. Procédé selon la revendication 4, caractérisé en ce que le dialkylbenzène est un m-dialkylbenzène, tandis que le dihydroxybenzène est le résorcinol.
7. Perfectionnement relatif à un procédé pour la fabrication d'un dihydroxybenzène à partir d'un dialkylbenzène, ce procédé comprenant les étapes qui consistent à oxyder, avec de l'oxygène et dans un réacteur d'oxydation, le dialkylbenzène en dihydroperoxyde de dialkylbenzène correspondant, en présence d'hydroxyde de sodium aqueux dilué en une quantité suffisante pour maintenir le pH dans l'intervalle de 7,0 à 7,5 dans le réacteur d'oxydation, séparer la phase organique et la phase aqueuse du réacteur d'oxydation et extraire la phase organique avec une solution aqueuse d'hydroxyde de sodium afin d'extraire le dihydroperoxyde en vue d'un traitement ultérieur, puis éliminer l'hydroxyde de sodium entraîné hors de la phase organique provenant de l'extracteur caustique avant son recyclage au réacteur d'oxydation, caractérisé en ce que l'hydroxyde de sodium entraîné dans la phase organique provenant de l'extracteur caustique est éliminé par lavage de cette phase avec la phase aqueuse provenant du réacteur d'oxydation, la phase organique provenant de l'unité de lavage étant acheminée au réacteur d'oxydation, tandis que la phase aqueuse provenant de l'unité de lavage est acheminée à une unité de purge en vue de son élimination.
8. Procédé selon la revendication 7, caractérisé en ce que le dialkylbenzène est un p-dialkylbenzène, tandis que le dihydroxybenzène est l'hydroquinone.
9. Procédé selon la revendication 7, caractérisé en ce que le dialkylbenzène est un m-dialkylbenzène, tandis que le dihydroxybenzène est le résorcinol.



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